

WHAT IS CLAIMED IS:

1. A method of forming a pattern by using a photomask having both a minute aperture where a main component of a transmitted light is an evanescent light and an aperture where a main component of a transmitted light is a propagating light, comprising the steps of:
5 forming a photoresist with a film thickness equal to or smaller than a width of the minute aperture on a substrate to be processed; and
10 exposing the photoresist by an incident light for exposure.
- 2., The method according to claim 1, wherein the light for exposure is entered in a direction
15 substantially perpendicular to the photomask.
3. The method according to claim 1, wherein the thickness of the photoresist is 100 nm or less.
- 20 4. The method according to claim 1, further comprising a step of bending the photomask toward the photoresist.
- 25 5. The method according to claim 1, further comprising a step of reducing a width of the aperture where the main component of the transmitted light is the propagating light to a value smaller than a

designed dimension.

6. The method according to claim 1, further
comprising a step of forming a buffer layer between the
5 photoresist and the substrate to be processed.

7. The method according to claim 6, wherein the
step of forming a buffer layer is a step of forming an
organic material film having a dry-etching resistant
10 property and a film having a reactive-ion-etching
resistant property.

8. The method according to claim 7, wherein a
thickness of the organic material film is 100 nm or
15 more.

9. The method according to claim 6, wherein the
step of forming a buffer layer includes a step of
forming an organic material film having a dry-etching
20 resistant property and wherein the photoresist is made
of a material having a reactive-ion-etching resistant
property.

10. The method according to claim 6, wherein the
25 buffer layer which is located under the photoresist has
a higher absorbance value for the exposure light than
that of the photoresist.

11. The method according to claim 1, wherein the minute aperture where a main component of a transmitted light is an evanescent light is periodically arranged in plurality at intervals of equal to or smaller than
5 the wavelength of the exposure light.

12. An apparatus for forming a pattern by using a method set forth in claim 1.

10 13. An apparatus for forming a pattern by using a photomask including both a minute aperture where a main component of a transmitted light is an evanescent light and an aperture where a main component of a transmitted light is a propagating light, comprising:

15 a sample stand for placing a substrate to be processed on which a photoresist with a film thickness equal to or smaller than a width of the minute aperture is formed;

a stage for placing the photomask;

20 a light source for generating light for exposure;
and

means for controlling a distance between the substrate to be processed and the photomask.

25 14. The apparatus according to claim 13, wherein the photomask comprises an elastic material as a mask material.

15. The apparatus according to claim 13, wherein a width of the aperture where the main component of the transmitted light is the propagating light is smaller than a designed dimension in the photomask.

WHAT IS CLAIMED IS:

13. (Currently Amended) An apparatus for forming a pattern by using a photomask including both a minute aperture where a main component of a transmitted light is an evanescent light and an aperture where a main component of a transmitted light is a propagating light, said apparatus comprising:

a sample stand for placing a substrate to be processed on which a photoresist with a film thickness equal to or smaller than a width of the minute aperture is formed;

a stage for placing the photomask;

a light source for generating light for exposure; and

means for controlling a distance between the substrate to be processed and the photomask.

14. (Original) The apparatus according to claim 13, wherein the photomask comprises an elastic material as a mask material.

15. (Original) The apparatus according to claim 13, wherein a width of the aperture where the main component of the transmitted light is the propagating light is smaller than a designed dimension in the photomask.